Clear Lake Nutrient TMDL Program Technical Memorandum

05 July 2018

Introduction

Clear Lake is the largest natural freshwater lake in California and one of the oldest lakes in North America. Nuisance algal blooms have been observed in Clear Lake throughout the 20th century with blooms well documented and described since the early 1970s. In 1986, Clear Lake was added to the Clean Water Act Section 303(d) List of Impaired Water Bodies because of nuisance algal blooms that impacted recreational uses. Existing study results and data analyses suggested that controlling phosphorus is the best approach for addressing the nuisance blooms. The Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board) approved a Basin Plan amendment on 23 June 2006 for the control of nutrients in Clear Lake. The U.S. Environmental Protection Agency (U.S. EPA) subsequently approved the control program for Clear Lake as a Total Maximum Daily Load (TMDL) on 21 September 2007. The focus of the control program is on reducing phosphorus loading to Clear Lake by including load allocations for point and nonpoint sources to limit the loads of phosphorus entering the Lake.

Executive Summary

This technical memorandum provides an overview of the Clear Lake Nutrient Control Program, the information Central Valley Water Board currently has regarding attainment of load allocations and recommended next steps for the TMDL. In order to assess next steps for the TMDL Program, staff must first determine if assigned load reductions have been met by each party. Significant management practices have been implemented in the watershed. However, loading data is not generally available to quantify most reductions and evaluate compliance with the TMDL. Staff will prioritize acquiring data and information to evaluate if load allocations are being met for each discharger. In addition to dischargers' activities, Appendix 1 summarizes various organizations' implementation and evaluation efforts occurring throughout the Clear Lake watershed.

Clear Lake Nutrient Control Program

In 2006, the Central Valley Water Board amended the Basin Plan. The Basin Plan Amendment, based on the recommendations and conclusions in a 2004 Tetra Tech report, included the elements of a TMDL for Clear Lake that established numeric load allocations for point and nonpoint sources that would result in phosphorus reductions needed to reduce the incidence of algal blooms.

Specific load limits were set for point source discharges in the watershed (urban storm water and Caltrans road building and maintenance activities) and a general load limit was set for the nonpoint sources, including irrigated lands and agencies responsible for

land management activities (such as the County of Lake, U.S. Bureau of Land Management (USBLM), and the U.S. Forest Service (USFS)). The allocated loading of phosphorus to Clear Lake is 87,100 kg per year which represents a 40% reduction in the 2006 average annual phosphorus loading. The 87,100 kg is allocated to point and nonpoint source dischargers. Point source dischargers, including Lake County Storm Water Permittees (County of Lake, Cities of Clearlake and Lakeport) and the California Department of Transportation, are given a waste load allocation of 2,000 and 100 kg per year, respectively. Nonpoint source dischargers, including USBLM, the USFS, irrigated agricultural dischargers, and Lake County, are given a collective load allocation of 85,000 kg phosphorus per year. The Basin Plan set a compliance date of 19 June 2017 to meet all allocations.

Status of TMDL Implementation Efforts

Staff compiled phosphorus reduction implementation efforts by the parties named in the TMDL from various sources including state and local permits, websites, and information submitted by parties in response to Water Code section 13267 orders issued by the Central Valley Water Board in 2016. This information was used to assess and summarize the status of each responsible party, including (where applicable):

- Completed and ongoing monitoring efforts
- Implementation of best management practices
- Staff conclusions regarding demonstrated compliance with TMDL waste load allocations

Point Sources

The TMDL includes allocations for point sources and nonpoint sources of phosphorus. Point sources release pollutants from discrete channels and are defined in statute. Point sources in the Clear Lake watershed include permitted storm water discharges. The allocations for permitted storm water sources are 2,000 kg/year for Lake County storm water permittees and 100 kg/year for Caltrans.

California Department of Transportation (Caltrans)

Caltrans' Municipal Separate Storm Sewer System (MS4) permit was already in place when the TMDL was adopted in 2007. Since then, the permit was amended in 2012, 2014, and 2015. In 2017, Executive Order 2017-0026 amended Order 2012-0011-DWQ (The Statewide Storm Water Permit Waste Discharge Requirements for Caltrans). This amendment updated the analytical methods for Total Phosphorus in the Permit with U.S. EPA's recently promulgated methods.

In September 2008, Central Valley Water Board staff approved an implementation plan to install four (4) monitoring stations at sites along the northern portion of Clear Lake, where Caltrans facilities lie near the Lake. Flow weighted composite samples are collected from these stations to estimate the concentration of total phosphorus in the runoff. The monitoring stations were installed in October 2010 and have captured two storm events. Two of the stations, Stations 1 and 3, had no flow during the rain events.

In 2015, Caltrans completed construction of the State Route 20/29 Roundabout, which incorporated pollution prevention BMPs such as incorporating compost, fiber rolls, rolled erosion control product (blankets), flared end sections, and adding curbs and gutters in the project design. In addition, Caltrans is in the process of implementing a project on State Routes 20 and 29 in Lake County to repair and improve 26 existing culverts, ditches, downdrains, drainage inlets, and drainage outlets that discharge in the Clear Lake watershed. Maintenance crews will continue to prioritize the removal of excess sediment from drainage inlets and roadside ditches here and within 200 feet of Clear Lake per the 2015 Statewide Stormwater Management Plan.

Based on the monitoring results and implemented management measures summarized above, Caltrans concluded the annual rate of phosphorus/sediment discharged from its right-of-way to Clear Lake complies with the TMDL waste load allocation. Central Valley Water Board staff concurs.

Lake County Storm Water

The Federal Clean Water Act (Clean Water Act) prohibits certain discharges of storm water containing pollutants except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES storm water program regulates some storm water discharges from three potential sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities.

The 2013 Small MS4 permit, issued to Lake County, City of Clearlake, and City of Lakeport as co-permittees, specifies actions necessary to reduce the discharge of pollutants in storm water to the Maximum Extent Practicable (MEP). This level of specificity was included to define Water Board expectations for control of storm water runoff from Phase II dischargers. However, the 2013 permit did not include specific provisions for TMDL and impaired waterbodies. The 2013 MS4 permit requires permittees with TMDL waste load allocations to develop and implement a Management Plan to demonstrate compliance.

In December 2017, an amendment to the 2013 Small MS4 permit was adopted. Among other requirements, the amendment requires permittees demonstrate compliance with adopted TMDLs. For Lake County, and the Cities of Clearlake and Lakeport, this includes activities like monitoring, implementation of best management practices (BMPs) to control erosion and sediment discharges as a means of controlling phosphorus, and documentation of those BMPs in Annual Reports. In addition, for those permittees in watersheds with TMDLs past their attainment dates, the MS4 amendment requires the permittee to develop and submit a management plan to the Regional Board that outlines how they will come into compliance with the TMDL. This would include identified BMPs and a schedule to reduce discharges of phosphorus to Clear Lake.

In 2003, a grant was awarded for $147,182 and applied to both the Clear Lake Mercury and Nutrient TMDLs. Specific to the Clear Lake Nutrient TMDL, project objectives included estimating various nutrients entering the lake and the average annual nutrient loading at three key streams with California Department of Water Resources (DWR) stream gaging stations: Kelsey Creek below Kelseyville, Middle Creek near Upper Lake

and Scotts Creek at Eickhoff Road. Results from the monitoring suggest there was not a strong correlation between flow and nitrogen, making it difficult to accurately estimate the nitrogen loading. However, there was a stronger correlation between flow and total phosphorus, as well as total phosphorus and total suspended solids. Total phosphorus estimates were significantly lower than previous estimates, including the TMDL, which estimated the average annual phosphorus load at 158,000 kg/yr. Average annual subwatershed loading rates were calculated at all three locations, which were extrapolated to the entire Clear Lake watershed. A summary of the loading estimates is provided in Table 1.

Table 1: Watershed Nutrient Loading Estimates

Nutrient Constituents	Nutrient Loading Estimate
Orthophosphate (Ortho-P)	37,100 – 51,400 kg/yr[1]
Total Phosphorus (Total P)	89,900 – 125,000 kg/yr
Suspended Solids	75,000 – 104,000 T/yr[2]
Iron	4,130 – 5,730 T/yr
Sulfate	1,940 – 2,700 T/yr
Total Nitrogen (Total N)	273 – 379 T/yr

[1]kg/yr means kilogram per year; [2]T/yr means metric ton per year

In 2015, the Lake County Watershed Protection District restarted a monitoring program for nutrients in some Clear Lake tributaries. This project is a continuation of the 2007-2008 Clear Lake Watershed TMDL Monitoring Program; however, the number of analytes have been reduced to a handful of nutrients. Samples are being collected at the California Department of Water Resources gages: Kelsey Creek below Kelseyville, Scotts Creek near Lakeport, and Middle Creek near Upper Lake.

Although implementation efforts, such as small stream restoration and tule mitigation, are underway or planned, and phosphorus loading estimates have been reduced, the data provided by the storm water permittees is not enough to verify they are complying with assigned waste load allocations in the Clear Lake Nutrient TMDL.

Nonpoint Sources

Nonpoint sources release pollutants from landscape scale features; sources can include agricultural field runoff and dust and air pollution from human activities. The allocation for nonpoint sources includes a combined allocation of 85,000 kg/year for the US Bureau of Land Management, the US Forest Service, Lake County and irrigated agriculture. This equates to a 40% load reduction for each responsible party.

Agricultural Sources

Commercial irrigated agriculture is regulated under the Central Valley Water Board's Irrigated Lands Regulatory Program (ILRP). Under the Sacramento Valley Water Quality Coalition (Coalition), the Lake County Farm Bureau Education Corporation implements the ILRP in the Clear Lake watershed. Irrigated agriculture occurs in only a small portion (< 2%) of Lake County's total acreage, with around 13,000 irrigated acres in Lake County's total acreage of approximately 850,000. Irrigated acreage consists primarily of wine grapes, walnuts, and pears.

There are two ILRP monitoring sites within the watershed: 1) Middle Creek Upstream of Highway 20 (MDLCR); and 2) Special Project site McGaugh Slough at Finley Road East (MGSLU). Monitoring is typically done during both the storm and irrigation seasons. In addition, water quality monitoring was conducted in Middle Creek at Rancheria Road from 1992-2000 (Tetra Tech, 2004). These results, when compared to monitoring conducted by the Coalition from 2007-2016 in Middle Creek upstream of HWY 20, indicate that sediment and phosphorus concentrations have significantly decreased in waters that flow into Clear Lake. Monitoring results from McGaugh Slough show phosphorus concentrations are roughly an order of magnitude higher than the concentrations in Middle Creek. These data are shown in Table 2 below. McGaugh Slough is often dry or stagnant during the year, with the site often dry during the scheduled monitoring events. Low flows and/or low dissolved oxygen concentrations may contribute to the higher phosphorus concentrations observed in McGaugh Slough relative to those observed in Middle Creek.

Table 2: Surface Water Monitoring Data in Clear Lake Watershed

Monitoring Location	Max Total P (mg/L)	Avg Total P (mg/L)	Max TSS (mg/L)	Avg TSS (mg/L)	Max pH (SU)	Avg pH (SU)	Max EC (µS/ cm)	Avg EC (µS/ cm)	Max Discharge (cfs) [3,4,5]	Avg Discharge (cfs) [3,4,5]
Middle Creek at Rancheria Road (1992-2000)[1]	2.4	0.051	1704	513	7.9	6	243	107	Not Reported	Not Reported
Middle Creek upstream from HWY 20 (2007-2011)[2]	0.43	0.06	260	22.1	8.27	7.66	458	220	178	54
Middle Creek upstream from HWY 20 (2012-2016)[2]	0.24	0.03	66	8.3	8.24	7.48	614	302	190	14
McGaugh Slough at Finley Road East (2012-2016)[2]	1.9	0.65	Not Reported	Not Reported	8.51	7.47	1329	764	0	0

[1] Data Source: Tetra Tech, 2004

[2] Data Source: CEDEN, 2017

[3] Discharge measurements were not taken during several high flow events due to dangerous conditions, and discharge measurements were reported as zero cubic feet per second (cfs) during low flow events if no measurable flow was observed at Middle Creek.

[4] Discharge measurements were not reported in 2007 or 2008 for the ILRP at Middle Creek.

[5] Discharge measurements were reported as zero cubic feet per second (cfs) for all but one sampling event at McGaugh Slough due to no measurable flows observed.

Phosphorus concentrations and total suspended solids concentrations in Middle Creek have been reduced by approximately an order of magnitude since monitoring was initiated in 1992. Phosphorus concentrations in Middle Creek from 2007-2016 have been reduced by approximately 50% and total suspended solids concentrations have been reduced by over 50%.

While monitoring results indicate that phosphorus concentrations and solids concentrations in Middle Creek have decreased significantly over the last few decades, there is not sufficient data to quantify the phosphorus loading reductions into Clear Lake for the following reasons:

- Middle Creek flows were not measured during several storm events due to unsafe conditions, and discharge measurements were reported as zero cubic feet per second (cfs) during low flow events if no measurable flow was observed in Middle Creek. In McGaugh Slough, discharge measurements were reported as zero cfs for all but one sampling event due to no measurable flows observed. These data impede the computing of accurate loading calculations.
- The majority of ILRP data were collected during drought years of 2007-2009 and 2011-2016; therefore, these data may not accurately represent current and near-future conditions in the Clear Lake watershed.

Although management practices have been implemented extensively to reduce agricultural contributions of phosphorus loads to Clear Lake, and historical and current monitoring data indicate that significant sediment and nutrient loading reductions have been realized, there is not sufficient data to quantify the phosphorus loading reductions into Clear Lake from agricultural sources. While monitored phosphorus concentrations in Middle Creek indicate it is likely that phosphorous loading into Clear Lake has been reduced, a 40% phosphorus loading reduction into Clear Lake cannot be calculated with the available data. Therefore, staff cannot verify if the agricultural source's waste load allocation is being met.

Lake County

In 2007, Lake County adopted a Grading Ordinance to provide guidelines and regulation of grading on public and private lands within the unincorporated areas of Lake County. All grading activates in unincorporated Lake County are subject to the grading ordinance, which requires a thorough environmental and plan review as well as follow-up inspections and mitigation monitoring.

The county continues to implement nutrient control activities in the watershed, including sediment controls, and riparian/wetland protection and restoration. In addition, the County is continuing to pursue funding for the Middle Creek Ecosystem and Restoration Project, which will significantly reduce the amount of phosphorus entering the Lake from the Scott and Middle Creeks.

However, at this time, Lake County cannot quantify their phosphorus load to the lake to demonstrate they have achieved a 40% phosphorus reduction. Therefore, despite the County's efforts to reduce phosphorus entering the Lake, the Central Valley Water Board cannot verify if their compliance with load allocations has been met.

United States Forest Service (USFS)

Since the nutrient control program was adopted, the Mendocino National Forest, Upper Lake Ranger District has:

- Implemented road drainage maintenance activities on approximately 12 miles of forest road in the Middle Creek and Nice-Lucerne watersheds
- Maintained approximately 19.5 miles of off-highway vehicle (OHV) trails
- Decommissioned 800 feet and closed 250 feet of OHV trails
- Constructed a native vegetation sediment basin adjacent to the OHV practice area in the Middle Creek campground

The USFS has also undertaken several projects to reduce sedimentation from OHV activities. These projects include closing both established and illegal trails that were steep and eroding in the watershed and adding rock to channel crossings to harden the crossing and preclude erosion. Sediment reduction was 100% in closed areas within a few seasons due to natural revegetation.

A reduction in connectivity through storm proofing methods decreased contributions of sediment into the stream system. Eighty percent of roads in the 42-mile project area were disconnected, leading to a potential sediment decrease from 2,263 tons/year to 1,063 tons/year (>50% reduction in sedimentation). USFS staff concluded via Water Erosion Prediction Project (WEPP) modeling that the project completion resulted in a 50% reduction in sedimentation from Forest roads in the watershed.

Best Management Practices and the evaluation of their implementation and effectiveness has been on-going in the watershed for decades on USFS land for all project activities including Range, Timber, Roads and Recreation. Up until 2015 the evaluations were managed at the Forest Service Regional level. Now BMP evaluations are done nationally under national standards and protocols. The number of evaluations completed in the watershed each year has varied from three to none. Both national and regional evaluations scored highly in recent years with less than 10% showing any problems or issues.

Though the projects discussed above have shown a large reduction in sedimentation at site specific locations, at this time, USFS has not quantified their NPS phosphorus load to the lake to verify that the reduction amounts to the required 40%. Therefore, the Central Valley Water Board cannot determine their allocation compliance status until there is enough data to link the BMP evaluations and sedimentation reduction projects to a 40% phosphorus loading reduction.

United States Bureau of Land Management (USBLM)

The United States Bureau of Land Management (USBLM), in coordination with the Scotts Valley Band of Pomo Indians, received a grant from the National Fish and Wildlife Foundation, Tribal Wildlife Grant Program, in the amount of $187,670 for the Eightmile Valley Sediment Reduction and Habitat Enhancement Project Design. Additional funding was received by the Tribe from the U.S. Bureau of Reclamation in the amount of $50,000. The project, located in the Upper Cache Creek Watershed, will consist of a design planning phase and restoration management implementation phase. One component of this project is monitoring sediment loads from this area, which are expected to be lessened considerably with project implementation. This project is recognized by Clear Lake Watershed stakeholders as central to controlling sediment entering the Lake.

In 2010, sections of the eastern portion of Mendo-Lake Road, from the western edge of the North Fork of Scott's Creek continuing 2.2 miles west beyond that point, was paved.

A 319(h) grant was awarded to USBLM Ukiah Field Office in the amount of $750,000 to perform sediment reduction and habitat enhancement in the same project area. This grant has been transferred to the Lake County Resource Conservation District, with USBLM as a cooperator.
The Eightmile Valley Sediment Reduction and Enhancement Project, is in the early phase and is scheduled to be completed by 2020.

The USBLM has developed an Off-Highway Vehicle (OHV) Wet Weather Closure Policy for the South Cow Mountain OHV Area, a popular OHV recreational area in the watershed. The policy provides a temporary closure to all motorized vehicles during specific conditions to reduce erosion. The USBLM conducts annual trail maintenance in the Cow Mountain Recreation Area, with a goal of minimizing soil loss, which ultimately reduces soil loss and sediment production. In addition, USBLM is initiating a soil monitoring program for the South Cow Mountain OHV Area, which will include a plan for revegetation. A Soil Conservation Plan was completed in 2016 to meet California State Parks - Off-Highway Motor Vehicle Recreation Division, Grant and Cooperative Agreement requirements for Soil Conservation for specific projects where ground disturbing activities are proposed and funding is requested and received. The goal of the USBLM, Ukiah Field Office Soil Conservation Plan is to set forth guidance for assessing, monitoring and maintaining the OHV trail system within the Cow Mountain OHV Recreation Area, Knoxville Recreation Area, and Indian Valley Recreation Area.

Although much effort has taken place to reduce phosphorus loads through various projects and policies, at this time, USBLM has not quantified their phosphorus load to the lake to verify that they have achieved an overall 40% phosphorus reduction. Therefore, the Central Valley Water Board cannot determine their allocation compliance status until there is enough data to link sediment reduction and erosion control programs and policies to a 40% phosphorus reduction.

Conclusions and Next Steps

Staff concludes that, apart from the California Department of Transportation, parties named in the TMDL have not quantified their phosphorus load to Clear Lake. Though significant progress has been made to reduce loads, there is not enough data to verify if these efforts have resulted in the identified TMDL load allocations, or if further activities are required. Therefore, the Central Valley Water Board cannot currently determine their allocation compliance status. To address this lack of information, staff's priority is to determine if the allocation has been met prior to evaluating next steps for the TMDL. Potential methods to gain more information and determine the progress of each waste load allocation may include:

- 13267 orders
- Cleanup and abatement orders
- Time schedule orders
- Requests for additional monitoring
- Further studies and analyses of current data
- Regulatory tools through permits linked to the TMDL

Staff will evaluate load allocations and determine appropriate next steps once further information and data has been acquired. These next steps could potentially include an amendment to the Basin Plan, the development of a watershed based management plan, or evaluation of other contributing factors. However, next steps cannot be determined until staff has the data to conclude whether required load reductions in phosphorus have been met by all dischargers.

Current and continuing staff efforts include, but are not limited to, providing technical guidance to ensure consistency with TMDL objectives, reviewing plans, enforcement coordination, and participation in stakeholder groups. Central Valley Water Board staff maintains a positive working relationship with Clear Lake Watershed stakeholders and are routinely contacted about local issues. Staff will continue these efforts and future efforts to gain additional information and evaluate load reductions.

Staff is also working to acknowledge and incorporate concerns from the August 2017 public meeting into future efforts. The following bullets summarize meeting participant comments regarding potential additions to the Nutrient Control Program.

- Monitoring – More monitoring sites are needed within the watershed to support evidence-based management.
- Sediment input to creeks – Need to identify erosive areas in the watershed and then implement erosion control.
- Middle Creek Flood Damage Reduction and Ecosystem Restoration Project – Need to continue efforts to acquire funding for this project, which could reduce phosphorus loading to the Upper Arm of Clear Lake by 28 percent.

Central Valley Water Board staff anticipate more stakeholder input meetings in the future to continue the discussions of the options for developing an amendment to the Basin Plan for the Clear Lake Nutrient Control Program.

In addition to gaining more information from responsible parties and stakeholders regarding phosphorus loads, staff is also aware that other factors could be contributing to harmful algal blooms. Further studies are necessary to understand Clear Lake's sediment chemistry and nitrogen cycling processes to potentially mitigate the impacts of nitrogen inputs and how Clear Lake's nitrogen-to-phosphorus ratio is affecting algal bloom growth. Furthermore, considering current and future trends for global warming and climate change is important while evaluating Clear Lake conditions in warmer temperatures. While managing warming conditions is difficult from a lake management perspective, addressing climate change impacts on Clear Lake may rely heavily on management practices to decrease nutrient inputs. Staff will assess these factors, along with the primary focus of phosphorus levels within the lake, when potential research or monitoring opportunities arise.

Appendix 1: Other Implementation and Evaluation Efforts

In addition to efforts made by responsible parties, other activities are occurring in the watershed to address erosion control and harmful algal blooms. These efforts include:

- Tribal Efforts
    - The environmental directors from the Big Valley Rancheria of Pomo Indians and the Elem Indian Colony of Pomo developed the Clear Lake Cyanobacteria Task Force in coordination with other local and government agencies to protect beneficial uses of Clear Lake, to support public health advisory postings at affected HAB sites, and to inform local drinking water systems of potential presence of cyanotoxins.
    - Big Valley Rancheria and the Elem Indian Colony are actively monitoring water quality at more than 20 sites along the lake. In addition, the Tribes coordinate with the California Department of Water Resources to obtain samples in the center of each arm of the lake. Monitoring data is distributed to the Cyanobacteria Task Force as well as made publicly accessible through a Water Quality Dashboard on the Big Valley Rancheria of Pomo Indian's website, the Clear Lake Water Quality Facebook page, and the US EPA's Water Quality Data exchange (WQX).
    - Big Valley Rancheria has implemented a storm water management program and several nutrient management projects within the Clear Lake watershed, including erosion control, weed removal, and algae control. In addition, the Tribe conducted a research project to quantify and map sanitary sewer overflows that occurred into Clear Lake between 2003-2010.
- Middle Creek Flood Damage Reduction and Ecosystem Restoration Project
    - The project will restore historic wetland and floodplain areas, help capture phosphorus-laden sediment, reduce flood risks, and enhance water quality. The project is currently in the first phase, which focuses on property acquisition of the project area. Once all the land has been acquired, the project will move on to the restoration phase.
    - In February 2018, Assembly Member Cecilia Aguiar-Curry (D-Winters) secured $15 million to aid in the Middle Creek Restoration project.
- Clear Lake Messaging Group
    - The Clear Lake Messaging Group is a multi-agency group with representatives from the Lake County Department of Water Resources, the Lake County Department of Public and Environmental Health, Lake

County Board of Supervisors and tribes (including Big Valley Rancheria and Elem Indian Colony). The group coordinates to provide information for the public, which addresses cyanobacteria, the health effects of cyanotoxins, and how the public can be alerted about blooms.

  - To increase awareness and protect public health, the group has created Warning and Danger signs that will be posted at sites when toxins reach threshold values.

- Environmental Drivers of Cyanobacteria Blooms and Cyanotoxins in Clear Lake
  - The Central Valley Water Board has received funding for a study to evaluate other environmental drivers that may cause harmful algal blooms in Clear Lake. The Board will be contracting with the Southern California Coastal Water Research Project (SCCWRP) and University of Southern California on the project. Project work is expected to begin in summer 2019.
- Development of Nonpoint Source Permits on Federal Lands
  - The Central Valley Water Board and the Lahontan Water Board, in collaboration with the USFS and USBLM, are pursuing the development of nonpoint source permits (Waste Discharge Requirements) to ensure regulatory compliance and water quality protection on USFS and USBLM lands.
  - In Summer 2018, staff will engage in research and field work for the areas of concern that were raised during meetings held in 2017 to help advise the permit development.
  - It is anticipated that the permit will be considered for adoption by the Central Valley and Lahontan Water Boards in 2019.
- Cannabis Cultivation policies
  - Following recent changes in state law and voter-approved initiatives, California's commercial cultivation of cannabis for recreational and medicinal use is expected to grow significantly. Considering this, new permits and regulations have been created to address any impacts that could impair water quality.
    - State Water Resources Control Board's Cannabis Cultivation Policy: State Water Board adopted the Policy and General Waste Discharge Requirements (Cannabis General Order) in October 2017. The Policy and General Order set strict environmental standards and a permitting system to protect flow and water quality in all the state's rivers and streams.

    - Central Valley Water Board's Cannabis Cultivation Waste Discharge Regulatory Program: In 2015 the Central Valley Water Board adopted a permit to protect water quality from impacts associated with medicinal cannabis cultivation. Inspections are conducted by CA Department of Fish and Wildlife staff and Board staff.
    - Lake County Cannabis Cultivation Regulations: Ordinance No. 3073 Amending Chapter 21, Article 27 of the Lake County Code Pertaining to Cannabis Cultivation was adopted by the Lake County Board of Supervisors March 2018 and went into effect April 2018.

- Delta Nutrient Research Plan
    - Central Valley Water Board staff developed a Strategic Workplan for the Delta that was presented to the Board in February 2014. Science Work Groups developed white papers, which address modeling, effects of nutrients on macrophyte abundance and distribution, effects of nutrients on the abundance and distribution of blue green algae, and the effects of nutrient forms and ratios on algal species composition. This effort will help inform mitigation efforts and further clarify the role nutrients play in water bodies impacted by harmful algal blooms, such as Clear Lake.

- AB 707- Blue Ribbon Committee for the Rehabilitation of Clear Lake
    - AB 707 (Public Resources Code Division 14.5) was signed into law by Governor Brown on 15 October 2017. The Committee, established in the Natural Resources Agency, will spearhead activities aimed at cleaning up the lake for environmental gains that will revitalize its regional significance. The committee will consist of at least nine members, including experts in fields such as agriculture and environment as well as tribal, local, and state agencies with interests in Clear Lake. A representative for Central Valley Water Board will serve on the committee.
    - This committee will meet quarterly, with two meetings per year held in Lake County, and provide an annual update to the Governor and other parties.

- Drinking Water Facilities' Source Water Protection Efforts
    - The California Surface Treatment Rule requires all water systems to update their watershed sanitary surveys every 5 years. In 2017, the Clear Lake Watershed Sanitary Survey was updated jointly by the 18 public water systems that use Clear Lake for their drinking water supply.

  - The Watershed Sanitary Survey consists of reports and two funding applications: an aeration and sonication at an intake project and a phosphorus loading study.

- Septic Tanks or Onsite Wastewater Treatment Systems (OWTS)
  - The OWTS Policy, effective May 2013, provides detailed requirements for septic tank construction with provisions made for upgrades, replacements, and newly installed septic systems based on tiers.
  - Lake County is in the process of resubmitting their Local Agency Management Plan (LAMP), which will be reviewed and approved by the Central Valley Water Board. As of 13 May 2018, Lake County must implement OWTS Policy Tier 1 standards or local codes, whichever are more stringent, until the LAMP is approved.